CLAIMS

We Claim:

1. A catalyst composition comprising, in combination, a polymerization catalyst comprising bulky ligand metallocene-type catalyst modifier having the formula [C]+ [A]- wherein the cation [C]+ does not possess an active hydrogen or other reactive group and [A]- is a weakly conducting metal or metalloid containing anion.

2. The catalyst composition of claim 1 wherein the anion [C]+ satisfies the formula [XR1 . . . Rn] wherein X is an atom having a permanent charge, selected from Group 15 of the Periodic Table and each R is independently an aliphatic or aromatic hydrocarbyl and n is the number of substitutions required to exhaust the ability of X to form additional chemical bonds.

3. The catalyst composition of claim 1 wherein [A]- has the chemical formula [YR'1 . . . R'm]- wherein Y is a metal or metalloid and each R' is, independently, hydride radicals, bridged or unbridged dialkylamido radicals, alkoxide and aryloxide radicals, hydrocarbyl and substituted hydrocarbyl radicals, and hydrocarbyl and halohydrocarbyl substituted organometalloid radicals and m is an integer equal to the valence state of Y+'.

4. The catalyst composition of claim 3 wherein said metalloid is boron.

5. The catalyst composition of claim 1 wherein said static charge modifier is selected from the group consisting of:

[N(C5H11)4][B(C6F5)4],
[N(C4H9)4][B(C6F5)4],
[P(C6H5)4][B(C6F5)4], and
[P(C4H9)4[B(C6F5)4],
[N(C18H37)4[B(C6F5)4],
[N(C18H37)2(CH3)2][B(C6F5)4].

6. The catalyst composition of claim 1 wherein said polymerization catalyst further comprises a carrier.

7. The catalyst composition of claim 6 wherein said carrier is an inorganic oxide carrier.

8. The catalyst composition of claim 1 further comprising a carrier and an activator.

9. The catalyst composition of claim 8 wherein said activator is alumoxane.

10. The catalyst composition of claim 1 wherein said static charge modifier is present in an amount ranging from .5 to 500 weight percent based on total polymerization catalyst weight.

11. continuous process for polymerizing olefin monomers in a reactor under polymerization conditions, the process comprising the steps of:

a. introducing one or more olefin monomers into the reactor;

b. introducing a polymerization catalyst comprising (i) a bulky ligand metallocene-type catalyst compound, and (ii) a static charge modifier having the formula [C]+ [A]- wherein C is a cation that does not possess an active hydrogen or other reactive group and [A]- is a weakly coordinating metal or metalloid containing anion; and

c. withdrawing a polymer from the reactor.

12. The process of claim 11 wherein the process is a slurry process.

13. The process of claim 11 wherein said process is a gas phase process.

14. The process of claim 11 wherein said olefins comprise ethylene ∀-olefin having from 3 to 20 carbon atoms, diolefins having from 6 to 20 carbon atoms and mixtures of 2 or more of olefins or diolefins.

15. The process of claim 11 wherein the anion [C]+ satisfies the formula [XR1 . . . Rn]+ wherein X is an atom having a permanent charge, selected from Group 15 of the Periodic Table and each R is independently an aliphatic or aromatic hydrocarbyl and n is the number of substitutions required to exhaust the ability of X to form additional chemical bonds.

16. The process of claim 11 wherein [A]- has the chemical formula [YR'1 . . . Rn]- wherein Y is a metal or metalloid and each R' is, independently, hydride radicals, bridged or unbridged dialkylamido radicals, alkoxide and aryloxide radicals, hydrocarbyl and substituted hydrocarbyl radicals, and hydrocarbyl and halohydrocarbyl substituted organometalloid radicals where m is an integer equal to the valence state of Y'.

17. The process of claim 16 wherein said metalloid is boron 5.

18. The process of claim 11 wherein said static charge modifier is selected from the group consisting of:

[N(C5H11)4][B(C6F5)4], [P(C4H9)4[B(C6F5)4], [N(C4H9)4][B(C6F5)4], [N(C18H37)4[B(C6F5)4], [P(C6H5)4][B(C6F5)4], and [N(C18H37)2(CH3)2][B(C6F5)4].

19. The process of claim 11 wherein said polymerization catalyst further comprises a carrier.

20. The process of claim 19 wherein said carrier is an inorganic oxide carrier.

21. The process of claim 11 further comprising a carrier and an activator.

22. The process of claim 21 wherein said activator is alumoxane.

23. The process of claim 11 wherein said static charge modifier is present in an amount ranging from .5 to 500 weight percent.

24. A method for controlling static charges in a polymerization reactor comprising the step of introducing a static charge modifier into said reactor said static charge modifier comprising a compound having the general formula [C]+ [A]- wherein [C]+ is a cation that does not possess an active hydrogen or other reactive group and [A]- is a weakly coordinating metal or metalloid containing cation.

25. The method of claim 24 further comprising the steps of dissolving said static charge modifier in a hydrocarbon diluent and introducing the solution into said reactor.

26. The method of claim 24 wherein said static charge modifier is further liquefied in that the anion [C]+ satisfies the formula [XR1 . . . Rn]+ wherein X is an atom having a permanent charge, selected from Group 15 of the Periodic Table and each R is independently an aliphatic or aromatic hydrocarbyl and n is the number of substitutions required to exhaust the ability of X to form additional chemical bonds.

27. The method of claim 24 wherein [A]- has the chemical formula [YR'1 . . . Rn]- wherein Y is a metal or metalloid and each R' is, independently, hydride radicals, bridged or unbridged dialkylamido radicals, alkoxide and aryloxide radicals, hydrocarbyl and substituted hydrocarbyl radicals, and hydrocarbyl and halohydrocarbyl substituted organometalloid radicals and where m is an integer equal to the valence of Y+1.

28. The method of claim 27 wherein said metalloid is boron 5.

29. The method of claim 24 wherein said static charge modifier is selected from the group consisting of:

[N(C5H11)4][B(C6F5)4], [P(C4H9)4[B(C6F5)4], [N(C4H9)4][B(C6F5)4], [N(C18H37)4[B(C6F5)4], [P(C6H5)4][B(C6F5)4], and [N(C18H37)2(CH3)2][B(C6F5)4].